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## Chapter 1

# Introduction

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The West is defined . . . by inadequate rainfall, which means a general deficiency of water. We have water only between the time of its falling as rain or snow and the time when it flows or percolates back into sea or the deep subsurface reservoirs of the earth. We can't create water, or increase it. We can only hold back and redistribute what there is.

Wallace Stegner,  
*The American West as Living Space*, 1987

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How does one portray the sudden blossoming of western cities that took place in this century? Los Angeles, up seventy-fold since 1900. Honolulu twenty-fold over the same period. Aptly named Phoenix two-hundred-fold, from 5,000 in 1900 to almost a million today. I have lived with this locomotive all my life, and only recently did I ask: Where is it headed?

Former Secretary of the Interior Stewart L. Udall,  
Pausing at the Pass: Reflections of a Native Son,  
in *Beyond the Mythic West*, 1990

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Water management transcends and encompasses nearly every other aspect of natural resources management. For too long, the state and federal governments have tackled individual resource problems without regard for the effects on other environmental elements. The time has come for a new, holistic approach to water and natural resources management which works toward a set of mutually agreed upon goals.

Senator Mark O. Hatfield, The Long's Peak  
Working Group and River Basin Trusts,  
*Environmental Law*, 1994

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## *Water and the Changing West*

As these brief quotations capture, the West today sees rapid population and economic growth upon a landscape characterized by limited and highly variable water supplies. A vision is growing that changes must be made in the way that we manage water; that this most precious of natural resources must be used in ways that can be sustained for generations; that our use and management of the resource must consider the broader consequences for the watershed and river basin; and that our efforts must be better coordinated and more cost effective.

At the same time, individuals and communities whose livelihoods directly depend upon historically established practices of water use—farmers, ranchers, industries, municipalities—are concerned that changes in how we manage water will violate their property rights or place intolerable or unfair burdens upon them. Not surprisingly, they resist these changes.

Major social change such as this is always difficult and contentious. Unfortunately, the institutions we have for the allocation and management of water are not always well equipped to carry out such changes in an effective and forward-looking fashion. As Senator Mark Hatfield said,

*As a U.S. Senator, I am astounded by the overlapping and conflicting jurisdictions and*

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*authorities of federal water law. . . . At least thirteen Congressional committees, eight Cabinet-level departments, six independent agencies, and two White House Offices are charged with responsibilities relating to national water policy development and management. This has created considerable confusion among the ranks of water policy makers and water policy implementors.*

Our state and federal water institutions are a quilt of historic programs and laws aimed at developing water for economic purposes and protecting those uses against change. These are interwoven with more recently created laws seeking to limit the negative environmental effects of the historic programs. The result is a large array of agencies and programs working at cross-purposes under different congressional direction and organized around different geographic units.

This institutional maze evolved from and reflects the diverse values and interest groups in society historically and today. As the West grows, and as demands on western rivers and streams exceed the water available, sharp conflicts occur among cities that need more water for growth, farmers who need water for crops, environmental groups that want more water for native fish, hydropower users that want rivers managed for electrical generation, anglers who want trophy fisheries, and rafters who want whitewater. Billions of dollars are spent annually in the West on these conflicts.

It was in this setting that Senator Hatfield envisioned an investigation and review of western water policy and institutions.

## ***The Charge to the Commission***

Section 3 [3003] of the Act of 1992 (Act) directs the President

*. . . to undertake a comprehensive review of Federal activities in the nineteen Western States which directly or indirectly affect the allocation and use of water resources, whether surface or subsurface, and to submit a report on the President's findings, together with recommendations, if any, to the Committees on Energy and Natural Resources, Environment and Public Works and Appropriations of the Senate and the Committees on Interior and Insular Affairs (now Resources), Public Works and Transportation, and Appropriations of the House of Representatives.*

To assist the President, the Act authorizes an advisory commission composed of eight citizen members appointed by the President, a representative from both the Secretary of the Army and the Secretary of the Interior, and 12 congressional members to serve as ex officio members of the Western Water Policy Review Advisory Commission (Commission). From the United States Senate: the Chairmen and the Ranking Minority Members of the Committee on Energy and Natural Resources; the Committee on Appropriations; and the Subcommittee of the Committee on Energy and Natural Resources, which has jurisdiction over the Bureau of Reclamation (the Water and Power Subcommittee). From the United States House of Representatives: the Chairmen and Ranking Minority Members of the Committee on Interior and Insular Affairs (now, Resources); the Committee on Public Works and Transportation (now, Transportation and Infrastructure); and the Committee on Appropriations.

## ***The Congressional Charge to the Commission***

Section 3305 of the Act of 1992 provides:

*The Commission shall —*

*(1) review present and anticipated water resource problems affecting the nineteen Western States, making such projections of water supply requirements as may be necessary and identifying alternative ways of meeting these requirements—giving considerations, among other things, to conservation and more efficient use of existing supplies, innovations to encourage the most beneficial use of water and recent technological advances;*

*(2) examine the current and proposed Federal programs affecting such States and recommend to the President whether they should be continued or adopted and, if so, how they should be managed for the next twenty years, including the possible reorganization or consolidation of the current water resources development and management agencies;*

*(3) review the problems of rural communities relating to water supply, potable water treatment, and waste water treatment;*

*(4) review the need and opportunities for additional storage or other arrangements to augment existing water supplies, including, but not limited to conservation;*

*(5) review the history, use, and effectiveness of various institutional arrangements to address problems of water allocation, water quality, planning, flood control and other aspects of water development and use, including, but not limited to, interstate water compacts, Federal-State regional corporations, river basin commissions, the activities of the Water Resources Council, municipal and irrigation districts and other similar entities with specific attention to the authorities of the Bureau of Reclamation under reclamation law and the Secretary of the Army under water resources law;*

*(6) review the legal regime governing the development and use of water and the respective roles of both the Federal Government and the states over the allocation and use of water, including an examination of riparian zones, appropriation and mixed systems, market transfers, administrative allocations, groundwater management, interbasin transfers, recordation of rights, Federal-State relations including the various doctrines of Federal reserved water rights (including Indian water rights and the development in Several States of the concept of a public trust doctrine); and*

*(7) review the activities, authorities, and responsibilities of the various Federal agencies with direct water resources management responsibility, including but not limited to the Bureau of Reclamation, the Department of the Army, and those agencies whose decisions would impact on water resource availability and allocation, including, but not limited to, the Federal Energy Regulatory Commission. #*

In his remarks in support of H.R. 429, the bill in which the Act was incorporated, Senator Hatfield stated that the Commission's purpose was to study and evaluate western water policies. He added that upon completion of this study, the "Commission will recommend necessary changes in the existing water policies to the President."

The duties of the Commission, as enumerated in the Act, are extensive and appear in the sidebar that follows. They include charges to:

1. Review present and anticipated water resource problems, making such projections of water supply requirements as may be necessary, and identify alternative ways of meeting these requirements—giving consideration, among other things, to conservation and more efficient use of existing supplies, innovations to encourage the most beneficial use of water, and the most recent technologies.
2. Review the history, use, and effectiveness of various institutional arrangements to address the problems of water allocation, water quality, planning, flood control, and other aspects of water development and use, including, but not limited to, interstate water compacts, federal-state regional corporations, river basin commissions, the activity of the water resource council, municipal and irrigation districts, and other similar entities.

These duties and others of a similar nature are repeated in the charter of the Commission as signed by Secretary Babbitt on May 16, 1996.

The Commission was chartered roughly 25 years after the last comprehensive review of United States water resources management and policy, by the

National Water Commission, was completed. Much of the National Water Commission's report, *Water Policies for the Future*, remains relevant today, although the West and the politics of water have changed substantially since 1973. The current Commission has had 2 and a half years and \$2 million to do its work, compared to the 5 years and \$22 million (adjusted for inflation) that went into the National Water Commission's final report. Thus, we have opted to build from that study by focusing on the important, often unanticipated, developments since 1973.

Based upon the emphasis in the Act, the Commission decided to focus primarily on the status of and trends in western water resources, and how those trends are being addressed by the policies, programs, and agencies of the federal government. The Commission recognized that the states have the primary role in allocating and distributing water, and interpreted its mandate as a federal commission to focus on the evaluation of federal rather than state programs. Because state and federal water programs intertwine, the Commission sought to inform itself about state water use and management trends but to limit recommendations in these areas.

### ***Implementing the Commission's Charge***

The Commission focused its efforts on the ultimate questions: "Are the current uses of water and water-related resources sustainable and, if not, what institutional changes will enhance sustainable management?" Sustainable development has been widely adopted as both an international and domestic norm against which to measure resource use choices. The 1996 President's Council on Sustainable Development defined sustainable

development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (The President's Council on Sustainable Development, 1996).

The Commission sought to identify the specific challenges that western water managers face in achieving sustainable use of the resource. We began in the winter and spring of 1996 by holding meetings in 10 locations: Oklahoma City, Denver, Omaha, Casper, Salt Lake City, Lewiston, Phoenix, Sacramento, Albuquerque, and Washington, DC. Participants were asked to identify key issues, questions, and challenges for the future of water in the West.

The scoping sessions produced a number of comments—some consistent, some contradictory. For example, water transfers were both opposed and endorsed. The Endangered Species Act was both criticized as an infringement on private property rights and defended as a necessary catalyst to force environmental protection. Participants addressed single issues such as the need to fulfill trust responsibilities to Native Americans or apply adaptive management. Other participants identified the need for federal agencies to clarify their new missions and to better integrate federal, state, and local planning. Still others emphasized the need for certainty in water rights and to reaffirm the primacy of the doctrine of prior appropriation. The need to decrease regulatory uncertainties that result from conflicts among agencies was stressed by many commentators. They also cautioned against advocacy of simplistic solutions, such as increased water conservation, without a full understanding of the long-term social and environmental effects of such a solution on a specific stream system. Many participants stressed the need to understand the intense pressures being felt by irrigated agriculture.

On the whole, the Commission was encouraged to look to the future rather than to refight past battles.

Based upon these meetings and review of the current literature, the Commission identified the following key areas of challenge for western water managers.

1. *New Methods of Governance*: How can we create institutions that can integrate and streamline the process of making policy, implementing water regulations, reaching decisions, and managing water from the local watershed level up to the river basin, across the many local, tribal, state, and federal jurisdictional and agency boundaries?
2. *Sustainable Water Supply and Water Use*: How can we ensure the availability of adequate water supplies for a growing West? How do we bring water use into balance with water supply?
3. *Meeting Our Water Obligations to Native Americans*: How can we expedite the process of addressing tribal water rights and providing safe water supplies to reservations?
4. *Aquatic Ecosystems*: How can we restore and maintain rivers in the West so that they can provide clean water, functioning aquatic and riparian habitats, and self-sustaining fish and wildlife populations?
5. *Water Quality*: How can we better achieve state and federal water quality standards for all water bodies?

6. *Flood and Flood Plain Management:* How can we provide flood protection and mitigation in ways that effectively reduce flood damages and are more financially and environmentally sustainable?
7. *Protecting Productive Agricultural Communities:* How can we support sustainable farming and ranching operations and help avoid the unintended consequences of local, state, and federal water policy?
8. *Maintaining the Federal Water Infrastructure:* How can we ensure that the major federal water storage and delivery systems in the West are adequately maintained to provide long-term benefits to society?
9. *Data Collection, Research, and Decisionmaking:* How can we better collect important water data, conduct research, and make water management decisions?

## The Commission's Investigations

To investigate these questions and develop recommendations, the Commission arranged for a road program of interest group and expert testimony and sponsored more than 20 research studies and symposia. A complete list of reports to the Commission appears on page vii.

### *Public Testimony*

The Commission received testimony from hundreds of individuals at its scoping meetings and from dozens of individuals, organizations, and agencies at

its formal meetings in Portland; Denver; San Diego; Tempe; Phoenix; Boulder; Washington, DC; San Francisco; and Boise. In San Diego and Phoenix, the Commission sponsored symposia on the water programs of the western states (with the Western States Water Council) and on Native American water issues (with the American Indian Resources Institute and the Native American Rights Fund).

In Washington, DC, the Commission received testimony from the urban water use community, while in San Francisco, it was briefed on the ongoing Bay-Delta process and received presentations from the environmental community. In Boise, the Commission heard from the irrigated agriculture community. Individual Commission members and staff made presentations about Commission activities to more than 50 conferences and organization meetings. In addition, the Commission maintained regular mailings to a database of more than 3,000 interested individuals and organizations and a website with Commission schedules and reports. Hundreds of written submissions were received from the public during the Commission's tenure as well as 1,500 pages of comments on the public review draft report.

### *Research on the West Today*

The Commission undertook a scientific review of the status and trends for water and related resources in the West today. Expert reports were commissioned on demographic and economic trends in the West, current and projected water use, climate change, drought and drought management, the status of aquatic ecosystems, water quality, land use changes and their relation to water resources, and trends in hydropower regulation.

Other studies were commissioned on the use of alternative dispute resolution methods to address water conflicts and on the historic disparities between upper and lower basin water development on the Missouri and Colorado Rivers. These studies have been published and distributed to more than 800 libraries nationwide, as well as to the National Technical Information Service repository.

### ***River Basin Studies***

Based on many of the concerns voiced at scoping meetings and from member input, the Commission opted to focus a great deal of its attention on river basin and watershed management. This decision reflected the longstanding recognition that the river basin is the appropriate management unit for water resources. During this century, there have been many attempts to develop effective river basin management institutions, but none have been fully successful for various reasons discussed in more detail in this report. The consistent theme has been the idea that rivers are complex natural and modified hydrologic units, each with its unique history and features, and policies should reflect this reality. In the 1990s, there has been a revival of interest in basin and watershed management because most water problems demand place-specific solutions, and these solutions are best formulated and implemented by the relevant stakeholders.

To better understand the myriad developments in basin and watershed management, the Commission authorized assessments of current conflicts in six key basins and the capability of existing management institutions to resolve them. Two large basins, the Colorado and Columbia, two medium-sized basins, the Platte and the Rio Grande, and two

more self-contained basins, the Sacramento-San Joaquin and the Truckee-Carson, were studied. In addition, the Commission contracted with the Natural Resources Law Center at the University of Colorado, Boulder to take advantage of the Center's extensive work in western watershed management initiatives. Its report, *Resource Management at the Watershed Level: An Assessment of the Changing Federal Role in the Emerging Era of Community-Based Watershed Management*, provided the Commission with a great deal of useful information about the strengths and limitations of local watershed management (Rieke and Kenney, 1997).

Because of the complexity of the river basin studies, the Commission first convened in each basin a group of federal and state representatives to meet with and assist the researchers. Also, the drafts of the basin studies were widely distributed and posted on the Commission Internet website for public review and comment for the researchers to consider in their final revisions.

All of the studies funded by the Commission, including the river basin reports, were independent reports for the Commission's use in its deliberations and preparation of its own report. While the Commission established the goals of the various research efforts, it did not control the products, nor did the Commission endorse or reject the individual reports.

**Agency Reports.**—One of the statutory charges to the Commission was to

*... review the activities, authorities, and responsibilities of the various federal agencies with direct water resources management responsibility, including but not limited to the Bureau of Reclamation, the Department of the*



*Army, and those agencies whose decisions would impact on water resource availability and allocation, including, but not limited to, the Federal Energy Regulatory Commission.*

Such analysis was to include considering "the possible reorganization or consolidation of the current water resources development and management agencies."

*The web-like structure which defines the functions of these agencies and hence their institutional relationships with each other is overly complex and illogical. Overlapping roles, conflicting programs and convoluted enforcement procedures are inevitably created by this snarled framework. While this Report makes immediate recommendations to lessen these problems by coordinating programs and budgets of the existing institutions, more complete efficiency and effectiveness may ultimately depend upon thorough administrative restructuring inside and out, including agency consolidation.*

The dozen federal agencies with significant water resources responsibilities were each requested to provide a report to the Commission describing how the agency was addressing the key water management challenges described above. Not all agencies responded to this request. Especially comprehensive reports were provided by the Bureau of Reclamation, the U.S. Army Corps of Engineers, the Department of Agriculture, and the Federal Energy Regulatory Commission. These reports and other sources were used to assess the direction key federal agencies are taking in meeting the West's water problems. Neither time nor resources allowed the Commission to conduct a comprehensive and detailed review of all federal water programs.

This Commission has studied the 1973 report of the National Water Policy Commission, *Water Policies for the Future*, with great attention. The 1973 report provides the benchmark for this Commission's work. By the standard that a commission report should establish the policy agenda for the next quarter-century, the National Water Commission's report stands up well. Our objective is to extend *Water Policies for the Future* by reiterating policy recommendations that remain sound and to address issues that have arisen since 1973, some predicted accurately by the Commission, some unanticipated.

## ***Organization of the Report***

As interesting as the individual reports to the Commission are, their value to the Commission comes from viewing the reports in aggregate, with a focus on westwide issues. This collective view is presented in the Commission's report as follows:

Chapter 2 describes the demographic, economic, and social trends underway in the West that are directly impacting water and related resources.

Chapter 3 assesses the challenges that these trends pose for water managers in achieving sustainable use of the West's water resources.

Chapter 4 surveys the history and evolution of federal agencies and their missions.

Chapter 5 examines the activities and the role of states and the federal government in meeting the challenge of sustainable resource management.

Chapter 6 concludes with the Commission's recommendations for sustainable water management, for new approaches to river basin

and watershed governance, and for other changes in federal water resources policy.

Appendix A contains biographical sketches of the Commission members.

Appendix B contains observations and comments on the Commission's Report submitted by individual Commission members.

Appendix C is a detailed description of the jurisdictions and authorities of the various congressional committees and federal agencies related to water resources.